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10/658,005

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James Robert Champion

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EXAMINER

CHERRY, STEPHEN J

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/658,005

Applicant(s)

CHAMPION, JAMES ROBERT

Examiner

Stephen J. Cherry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3-29-2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

New corrected drawings are required in this application because the drawings are contain hand drawn characters and figures, rendering them difficult to comprehend. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation:

a coupler

positioned at a point of interest

for coupling the second electromagnetic signal to the second conductive element

in response to a change in capacitance associated with the first conductive element

caused by the first electromagnetic signal traversing a part of the first conductive element

substantially adjacent to the coupler

The claim recites a structural element, a coupler; then further recites features or the coupler. However, each of the following descriptive phrases does not unambiguously recite which phrase is being modified. For example, it is unclear whether the phrase "caused by the first electromagnetic signal traversing a part of the first conductive element" is modifying the "coupling" or "change in capacitance" recitations.

Similarly, claim 16 recites:

receiving a second electromagnetic signal based on the first electromagnetic signal at a second conductive element,

the second electromagnetic signal being coupled to the second conductive element

in response to a change in capacitance of the first conductive element

caused by the first electromagnetic signal traversing a part of the first conductive element

substantially adjacent to a coupler,

wherein the coupler is positioned at a point of interest

It is not possible to ascertain whether the “caused by” recitation is modifying the “coupled” recitation or the “change in capacitance” recitation.

It is recommended that applicant amends the claims to include “wherein” phrases of the form, “wherein, said (*structure or function*) is (*modified by descriptive language*)” for each of the modifying phrases.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9, 12-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,137,282 to Macke, Sr. et al.

Claim 1 recites, as anticipated by Macke:

1 . A system for measuring distances, the system comprising:  
a first conductive element conveying a first electromagnetic signal ('282, figs. 4-5, 304 and 408);

a second conductive element conveying a second electromagnetic signal based on the first electromagnetic signal ('282, figs. 4-5, 306 and 410);  
a coupler positioned at a point of interest for coupling the second electromagnetic signal to the second conductive element in response to a change in capacitance associated with the first conductive element caused by the first electromagnetic signal traversing a part of the first conductive element substantially adjacent to the coupler ('282, col. 4, line 66); and  
a processor determining a distance associated with the point of interest based at least in part on a time delay between the first and second electromagnetic signals ('282, fig. 1).

Claim 2 recites, as anticipated by Macke:

2. The system of claim 1 wherein the first electromagnetic signal exhibits an ultra-wideband frequency ('282, col. 3, line 5, "pulse" contains broad range of spectral content).

Claim 3 recites, as anticipated by Macke:

3. The system of claim 1 further comprising a transmitter for forming the first electromagnetic signal ('282, fig. 1, 12 and 14).

Claim 4 recites, as anticipated by Macke:

4. The system of claim 1 further comprising a receiver for detecting the time delay between the first and second electromagnetic signals ('282, fig. 1, 20 and 22).

Claim 5 recites, as anticipated by Macke:

5. The system of claim 4 wherein the receiver includes an equivalent time sampling circuit ('282, fig. 1).

Claim 6 recites, as anticipated by Macke:

6. The system of claim 1 wherein the first and second conductive elements form a parallel conductor transmission line structure ('282, col. 4, line 66).

Claim 7 recites, as anticipated by Macke:

7. The system of claim 1 wherein the first and second conductive elements are flexible ('282, col. 3, line 54).

Claim 8 recites, as anticipated by Macke:

8. The system of claim 1 wherein the first and second conductive elements exhibit quadrilateral cross-sections ('282, 304 and 306, cross section taken lengthwise).

Claim 9 recites, as anticipated by Macke:

9. The system of claim 1 wherein the first and second conductive elements exhibit substantially identical cross-sections (282, figs. 4 and 5).

Claim 12 recites, as anticipated by Macke:

12. The system of claim 1 wherein the distance determined by the processor corresponds to a dimension associated with an object ('282, fig. 5, distance corresponds to width of portion 404).

Claim 13 recites, as anticipated by Macke:

13. The system of claim 1 wherein the distance determined by the processor corresponds to a displacement between a plurality of objects ('282, fig. 4, distance corresponds to displacement between buttons 310a-310f).

Claim 14 recites, as anticipated by Macke:

14. The system of claim 1 wherein the distance determined by the processor corresponds to an angular orientation ('282, col. 3, line 54, buttons in curved path would have an angular relationship to one another, rather than the linear relationship shown in figs. 4-5).

Claim 15 recites, as anticipated by Macke:

15. The system of claim 1 wherein the distance determined by the processor corresponds to a degree of pressure ('282, fig. 4, signal corresponds to pressure on buttons).

Claim 16 recites, as anticipated by Macke:

16. A method of measuring distances, the method comprising:  
transmitting a first electromagnetic signal on a first conductive element ('282, figs. 4-5, 304 and 408); receiving a second electromagnetic signal based on the first electromagnetic signal at a second conductive element ('282, figs. 4-5, 306 and 410), the second electromagnetic signal being coupled to the second conductive element in response to a change in capacitance of the first conductive element caused by the first electromagnetic signal traversing a part of the first conductive element



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substantially adjacent to a coupler, wherein the coupler is positioned at a point of interest ('282, col. 4, line 66); and determining a distance associated with the point of interest based at least in part on a time delay between the first and second electromagnetic signals ('282, fig. 1 and col. 3, line 5).

Claim 17 recites, as anticipated by Macke:

17. The method of claim 16 wherein the distance associated with the point of interest corresponds to a dimension associated with an object ('282, fig. 5, distance corresponds to width of portion 404).

Claim 18 recites, as anticipated by Macke:

18. The method of claim 16 wherein the distance associated with the point of interest corresponds to a displacement between a plurality of objects ('282, fig. 4, distance corresponds to displacement between buttons 310a-310f).

Claim 19 recites, as anticipated by Macke:

19. The method of claim 16 wherein the distance associated with the point of interest corresponds to an angular orientation ('282, col. 3, line 54, buttons in curved path would have an angular relationship to one another, rather than the linear relationship shown in figs. 4-5).

Claim 20 recites, as anticipated by Macke:

20. The method of claim 16 wherein the distance associated with the point of interest corresponds to a degree of pressure ('282, fig. 4, signal corresponds to pressure on buttons).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent 6,137,282 to Macke, Sr. et al in view of U.S. Patent 6,307,380 to Hirai et al.

The claim recites, as disclosed by Macke:

a first conductive element conveying a first electromagnetic signal ('282, figs. 4-5, 304 and 408);

a second conductive element conveying a second electromagnetic signal based on the first electromagnetic signal ('282, figs. 4-5, 306 and 410);

a coupler positioned at a point of interest for coupling the second electromagnetic signal to the second conductive element in response to a change in capacitance associated with the first conductive element caused by the first electromagnetic signal traversing a part of the first conductive element substantially adjacent to the coupler ('282, col. 4, line 66); and

a processor determining a distance associated with the point of interest based at least in part on a time delay between the first and second electromagnetic signals ('282, fig. 1).

Macke does not disclose a slidable element.

The claim further recites, as disclosed by Hirai:

further comprising a supporting material for slidably receiving the coupler in a channel defined therein, the supporting material maintaining a consistent displacement between the coupler and the first and second conductive elements ('380, fig. 20, protective layer, 47 allows sliding of mismatch generator).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Macke with the sliding element of Hirai to allow liquid level to be measured ('380, fig. 20).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,608,489 to Yankielun et al.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Cherry whose telephone number is (571) 272-2272. The examiner can normally be reached on M-F 8:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJC



John Barlow  
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